RELATIVE HUMIDITY WITH APPLICATION TO FOREST FIRES

IN

SOUTH CAROLINA

Prepared By
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ESSA WEATHER BUREAU
COLUMBIA, SOUTH CAROLINA

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INTRODUCTION

This report was prepared in an effort to provide forestry interests with an informative pamphlet on relative humidity and its effects on forest fires in South Carolina.

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REFERENCE

Local Climatological Data for Weather-reporting stations in and near South Carolina, National Weather Records Center, Asheville, North Carolina.

Humidity is a measure of the quantity of water in vapor in the atmosphere. This may be expressed as vapor pressure, absolute humidity, specific humidity, mixing ratio, or dew point temperature. The most popular and the best understood of these terms is relative humidity. The relative humidity is the ratio, expressed in percent, of the actual water vapor in the air to the amount required to saturate the air at the existing temperature and pressure.

The capacity of the air to hold water vapor varies directly with the temperature. Therefore, if there is no change in the water vapor content of the air or in the atmospheric pressure, the diurnal variation of the relative humidity is in general opposite to that of temperature. The maximum usually occurs in the late night and early morning. The minimum occurs in the early afternoon. In regions influenced by sea breezes, the relative humidity may increase during the day. The decrease of relative humidity with height is generally greater at night than in the daytime. It is generally accepted that on a calm night the relative humidity at a few inches above the earth may be as much as 40 percent greater than that at the 6-ft. level.

Statistics presented in this paper are for the 5-ft. level. Therefore, the general relationships concerning relative humidity must be considered if these data are to be correctly adjusted to other heights.

Table 1 presents the general relationship between temperature, wet bulb, dewpoint and relative humidity. The important effect that the change in temperature has on relative humidity is obvious from this listing. Relative humidity is forecast on a regular basis in the forestry program at the Columbia Weather Bureau Office. Humidity is one of the important elements which goes into the computation of fire danger. In general, supervisory fire control personnel use this forecast of fire danger to set up day-to-day assignments of their manpower.

TABLE I

RELATIVE HUMIDITY AND DEW POINT TABLE
(Pressure 30 inches of Mercury)

Locate at the top of the column the reading corresponding to the wet bulb temperature. Locate at the left side of the table the reading corresponding to the dry bulb temperature. Follow down the column under the wet bulb temperature, and across from the dry bulb temperature; at the intersection of these two columns will be found the relative humidity (in percent) in bottom half of block and the dew point (°F.) in top half of block.

WET BULB TEMPERATURES

DRY BULB TEMPERATURES

	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
30	-31 6	-12 15	-1 25	+6 35	11 45	16 56	20 66	24 77	27 88	30 99																														
31		-23 8	-8 18	+1 27	8 37	13 47	18 57	22 68	25 78	28 89	31 99																													
32		-48 2	-16 11	-4 20	+4 30	10 39	15 49	19 59	23 69	26 79	29 89	32 100																												
33			-31 5	-12 14	-1 23	+6 32	12 41	17 51	21 60	24 70	28 80	30 90	33 100																											
34				-22 8	-7 16	+2 25	9 34	14 43	18 52	22 62	26 71	29 81	32 90	34 100																											
35				-47 2	-16 10	-4 19	+5 27	11 36	16 45	20 54	24 63	27 72	30 81	33 91	35 100																										
36					-30 5	-11 13	0 21	+7 29	13 38	18 47	22 55	25 64	28 73	31 82	34 91	36 100																										
37						-21 7	-6 15	+3 23	9 31	15 40	19 48	23 57	26 65	29 74	32 82	35 91	37 100																									
38						-42 2	-14 10	-2 18	+6 25	12 33	17 42	21 50	25 58	28 66	31 74	33 83	36 91	38 100																								
39							-27 5	-9 12	+1 20	8 28	14 35	19 43	22 51	26 59	29 67	32 75	34 83	37 92	39 100																								
40								-18 7	-4 15	+4 22	11 30	16 37	20 45	24 52	27 60	30 68	33 76	35 84	38 92	40 100																								
41								-36 3	-12 10	-1 17	+7 24	13 32	18 39	22 46	25 53	29 61	31 68	34 76	37 84	39 92	41 100																								
42									-23 5	-7 12	+3 19	10 26	15 33	20 40	23 47	27 54	30 62	33 69	35 77	38 84	40 92	42 100																								
43									-49 1	-15 8	-2 14	+6 21	12 28	17 35	21 41	25 48	28 55	31 62	34 70	36 77	39 85	41 92	43 100																								
44										-29 4	-9 10	+2 17	9 23	14 29	19 36	23 43	26 49	29 56	32 63	35 70	37 78	40 85	42 92	44 100																								
45											-18 6	-4 12	+5 19	11 25	16 31	21 37	24 44	28 51	31 57	34 64	36 71	39 78	41 85	43 93	45 100																								
46											-35 2	-11 8	0 14	+7 20	13 26	18 32	22 39	26 45	29 52	32 58	35 65	37 72	40 79	42 86	44 93	46 100																								
47												-22 5	-6 10	+3 16	10 22	16 28	20 34	24 40	27 46	31 53	33 59	36 66	39 72	41 79	43 86	45 93	47 100																								
48												-45 1	-14 7	-2 12	+6 18	13 24	18 29	22 35	26 41	29 47	32 54	35 60	37 66	40 73	42 79	44 86	46 93	48 100																								
49													-27 3	-8 9	+2 14	9 20	15 25	20 31	24 37	27 42	30 48	33 54	36 61	39 67	41 73	43 80	45 86	47 93	49 100																								
50														-17 5	-3 10	+5 16	12 21	17 27	21 32	25 38	29 44	32 49	35 55	37 61	40 68	42 74	44 80	46 87	48 93	50 100																								
51														-33 2	-11 7	+1 12	8 17	14 23	19 28	23 34	27 39	30 45	33 50	36 56	39 62	41 68	43 74	45 81	47 87	49 93	51 100																								
52															-21 4	-5 9	+4 14	11 19	17 24	21 29	25 35	29 40	32 46	35 51	37 57	40 63	42 69	44 75	46 81	48 87	50 94	52 100																								
53															-42 1	-13 6	-1 11	+8 16	14 21	19 26	23 31	27 36	30 41	33 47	36 52	39 58	41 64	43 69	45 75	47 81	49 87	51 94	53 100																								
54																-25 3	-7 8	+3 12	11 17	16 22	21 27	25 32	28 37	32 42	35 48	37 53	40 59	42 64	44 70	47 76	49 82	50 88	52 94	54 100																								
55																-57	-15 5	-2 9	+7 14	13 19	18 24	23 28	27 33	30 38	33 43	36 49	39 54	41 59	43 65	46 70	48 76	50 82	51 88	53 94	55 100	56	57	58	59	60
56																	-29 2	-8 7	+3 11	10 16	16 20	21 25	25 30	28 35	32 39	35 44	37 50	40 55	42 60	45 65	47 71	49 77	51 82	53 88	54 94	56 100					
57																		-17 4	-3 8	+6 13	13 17	18 22	23 26	27 31	30 36	33 41	36 45	39 50	41 56	44 61	46 66	48 71	50 77	52 83	54 88	55 94	57 100				
58																		-33 2	-10 6	+2 10	10 14	16 19	21 23	25 28	28 32	32 37	35 42	38 46	40 51	43 56	45 61	47 67	49 72	51 77	53 83	55 88	56 94	58 100			
59																			-19 3	-4 7	+6 12	13 16	18 20	23 24	27 29	30 33	33 38	36 43	39 47	41 52	44 57	46 62	48 67	50 72	52 78	54 83	56 89	57 94	59 100	
60																			-38 1	-11 5	+1 9	9 13	15 17	20 21	25 26	29 30	32 34	35 39	38 44	40 48	43 53	45 58	47 63	49 68	51 73	53 78	55 83	57 89	58 94	60 100

TABLE I, (continued)

WET BULB TEMPERATURES

RELATIVE HUMIDITY AND DEW POINT TABLE
(Pressure 30 inches of Mercury)

Locate at the top of the column the reading corresponding to the wet bulb temperature. Locate at the left side of the table the reading corresponding to the dry bulb temperature. Follow down the column under the wet bulb temperature, and across from the dry bulb temperature; at the intersection of these two columns will be found the relative humidity (in percent) in bottom half of block and the dew point (^{o}F.) in top half of block.

DRY BULB TEMPERATURES

	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
61	-21	-4	+5	12	18	23	27	30	34	36	39	42	44	46	48	50	52	54	56	58	59	61																															
	3	7	11	15	19	23	27	31	36	40	44	49	54	58	63	68	73	78	84	89	94	100																															
62	-44	-12	+1	9	15	20	25	29	32	35	38	41	43	45	48	50	52	54	55	57	59	60	62																														
	1	4	8	12	16	20	24	28	32	37	41	45	50	54	59	64	69	74	79	84	89	95	100																														
63		-23	-5	+5	12	18	23	27	31	34	37	39	42	44	47	49	51	53	55	56	58	60	61	63																														
		2	6	10	14	17	21	25	29	33	38	42	46	51	56	60	65	69	74	79	84	89	95	100																														
64		-50	-13	0	+9	15	21	25	29	32	35	38	41	43	46	48	50	52	54	56	57	59	61	62	64																														
		1	4	8	11	15	19	23	26	30	34	39	43	47	51	56	60	65	70	74	79	84	89	95	100																														
65			-25	-5	+5	12	18	23	27	31	34	37	40	42	45	47	49	51	53	55	57	59	60	62	63	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
			2	6	9	13	16	20	24	28	31	35	38	40	44	46	48	51	53	55	56	58	60	62	63	65	100																										
66			-57	-13	0	+9	15	21	25	29	33	36	39	41	44	46	48	50	52	54	56	58	60	61	63	64	66																										
				4	7	10	14	18	22	25	29	32	36	40	44	49	53	57	62	66	71	75	80	85	90	95	100																										
67				-26	-6	+5	12	18	23	27	31	34	37	40	43	45	47	50	52	54	55	57	59	61	62	64	65	67																								
				2	5	8	12	15	19	22	26	30	34	37	41	45	49	54	58	62	66	71	76	80	85	90	95	100																								
68					-14	0	+9	16	21	25	29	33	36	39	42	44	47	49	51	53	55	57	58	60	62	63	65	67	68																								
					3	7	10	13	17	20	24	27	31	34	38	42	46	49	53	58	63	67	71	76	81	85	90	95	100																								
69					-26	-6	+5	13	19	23	28	31	35	38	41	43	46	48	50	52	54	56	58	60	61	63	64	66	68	69																								
					2	5	8	11	14	18	21	25	28	32	35	39	43	47	51	55	59	63	67	72	76	81	85	90	95	100																								
70						-14	0	+9	16	21	26	30	33	36	39	42	45	47	49	51	53	55	57	59	61	62	64	66	67	69	70																								
						3	6	9	12	16	19	22	26	29	33	36	40	44	48	51	55	60	64	68	72	76	81	86	90	95	100																								
71						-26	-5	+5	13	19	24	28	32	35	38	41	44	46	48	51	53	55	56	58	60	62	63	65	67	68	70	71																								
						2	5	8	11	14	17	20	23	27	30	34	37	41	45	48	52	56	60	64	68	73	77	81	86	90	95	100																								
72							-13	+1	10	16	22	26	30	34	37	40	43	45	47	50	52	54	56	57	58	59	61	63	64	66	68	68	69	71	72																							
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73							-26	-5	+6	13	19	24	29	32	36	39	41	44	47	49	51	53	55	57	59	61	65	62	64	66	67	69	70	72	73																							
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74								-13	+1	10	17	22	27	31	34	37	40	43	46	48	50	52	54	56	58	60	62	63	65	67	68	70	71	73	74	75																							
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75								-25	-4	+6	14	20	25	29	33	36	39	42	45	47	49	52	54	56	58	59	61	63	65	66	68	69	71	72	73	74	75	76	77	78	79	80												
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76								-57	-12	+2	11	17	23	27	31	35	38	41	44	46	49	51	53	55	57	59	61	62	64	66	67	69	70	72	73	75	76																		
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77									-23	-3	+7	15	21	25	30	33	37	40	43	45	48	50	52	54	55	58	60	62	63	65	67	68	70	71	73	74	76	77																	
									2	4	7	9	12	15	18	20	23	26	29	32	35	39	42	45	49	52	56	59	63	67	71	75	79	83	87	91	96	100																
78									-49	-11	+3	12	18	23	28	32	35	39	41	44	47	49	51	53	56	57	59	61	63	65	66	68	69	71	72	74	75	77	78															
										3	5	8	10	13	16	19	21	24	27	30	34	36	39	41	44	46	49	53	56	60	63	67	71	75	79	83	87	91	96	100														
79										-21	-2	+8	15	21	26	30	34	37	40	43	46	48	51	53	55	57	59	61	62	64	66	67	69	70	72	73	75	76	78	79														
										2	4	6	9	12	14	17	20	22	25	28	30	33	36	38	41	43	47	50	53	56	60	63	66	70	74	78	83	87	91	96	100												
80										-43	-9	+4	12	19	24	29	33	36	39	42	45	47	50	52	54	56	58	60	62	64	65	67	68	70	72	73	74	76	77	79	80	81	82	83	84	85								
											3	5	8	10	13	15	18	21	23	26	29	32	35	38	41	44	47	50	54	57	61	64	68	72	75	79	83	87	91	96	100												
81											-19	-1	+9	16	22	27	31	35	38	41	44	46	49	51	53	55	57	59	61	63	65	66	68	70	71	73	74	76	77	78	80	81												
											2	4	6	9	11	14	16	19	22	25	28	30	33	35	38	42	45	48	51	53	56	59	61	63	65	66	68	70	72	76	80	83	87	92	96	100								
82											-37	-7	+5	13	20	25	29	33	37	40	43	45	48	50	53	55	57	59	61	62	64	66	68	69	71	72	74	75	77	78	79	81	82											
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83												-16	0	+10	17	23	28	32	35	39	42	44	47	50	52	54	56	58	60	62	64	65	67	69	70	72	73	75	76	78	79	80	82	83											
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84												-31	-6	+6	14	21	26	30	34	37	41	43	46	49	51	53	55	57	59	61	63	65	67	68	70	71	73	74	76	77	79	80	81	83	84										
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85													-14	+2	11	18	24	28	33	36	39	42	45	48	50	53	55	57	59	61	63	64	66	68	69	71	72	74	75	77	78	80	81	82	84	85										
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86														-26	-4	+8	15	22	27	31	35	38	41	44	47	49	52	54	56	58	60	62	64	66	67	69	70	72	74	75	77	78	79	81	82	83	85	86								
														1	3	5	7	9	12	14	16	18	21	23	26	28	31	34	36	39	42	45	48	51	54	57	60	63	67	70	73	77	81	84	88	92	96	100								
87															-11	+3	12	19	25	29	33	37	40	43	46	49	51	53	55	58	59	61	63	65	67	68	70	72	73	75	76	78	79	80	82	83	84	86	87								
															2	4	6	8	10	13	15	17	19	22	24	27	29	32	34	37	40	42	45	48	51	54	57	60	63	67	70	74	77	81	84	88	92	96	100								
88																-22	-2	+9	17	23	28	32	36	39	42	45	48	50	53	55	57	59	61	63	64	66	68	70	71	73	74	76	77	79	80	81	83	84	85	87	88							
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89																	-45	-8	+5	14	20	26	30	34	38	41	44	47	49	52	54	56	58	60	62	64	66	67	69	71	72	74	75	77	78	80	81	82	84	85	86	88	89						
																		2	4	6	8	10	12	14	17	19	21	23	26	28	30	33	36	38	41	44	46	49	52	55	58	61	64	68	71	74	78	81	85	88	92	96	100						
90																		-17	0	+11	18	24	29	33	37	40	43	46	48	51	53	55	58	60	62	63	65	67	69	70	72	73	75	76	78	79	81	82	84	85	86	87	89	90					
																		1	3	5	7	9	11	13	15	17	20	22	24	26	29	31	34	36	39	42	45	48	51	54	57	60	63	67	70	74	78	81	85	89	92	96	100					

Yearly appropriations are also set up according to averages of past fire danger. So humidity is an important element in fire control, administration and action.

During the 1965-66 and the 1966-67 fire seasons, the following was observed on the twenty-seven district days in which 1000 acres total burned in a district:

23 days, RH was below 35 percent (85 percent of total)

18 days, RH below 30 percent (67 percent of total)

25 days, Build-up Index above 40

22 days, Build-up Index above 50

17 days, Build-up Index above 60

7 days, Build-up Index above 70

(Build-up Index is a number expressing the cumulative effect of daily drying factors and precipitation in fuels with a 10-day time lag constant. Relative humidity is one of the meteorological parameters used in computing the Build-up Index).

23 days, wind was 10 mph or higher

27 days, wind was 8 mph or higher

A long period of record on relative humidity measurements is available at only a few places in South Carolina. Over the last 2 or 3 years State and U. S. Forestry interests have set up stations to measure relative humidity in almost every county. The variation from one part of the state to another is comparatively small on the average. For example, the diurnal variation at only one place is much larger than the variation from one part of the state to another. Seasonal variations of relative humidity at any one place are also small when compared with diurnal variations.

The duration of percentage frequency of relative humidity below, or above certain values is of importance in some operations. Table 2 shows for several cities in and near South Carolina the percent of time by season that

the relative humidity is below 30, 50, 80 and 90 percent respectively. Since some activities are confined to daytime, percentages are shown separately for all hours and for daytime hours (7:00 a.m. to 6:00 p.m.). The comparatively small variation from one place to another, especially during daytime hours, is noteworthy.

The percent of time that the relative humidity is between successive values shown at the top of the table is easily determined by subtraction. For example, the daytime relative humidity at Columbia, South Carolina during spring is between 50 percent and 70 percent twenty-three percent of the time (72 minus 49 percent).

Tables 3a through 3e for selected months at different cities list the percent of time the relative humidity is below the indicated value at a certain time of day. This data enables the user to estimate the daily humidity cycle.

Although relative humidity is regularly recorded at only a few places in South Carolina, satisfactory estimates of averages or frequencies for other places over the state can be interpolated from the above tables. Except for diurnal variations, large changes in temperatures and/or moisture content, the major controls of relative humidity occur only with changes in air masses. The geographic dimensions of air masses possessing similar temperature and moisture content are such that large areas of the state are usually under the influence of the same air mass. It is for this reason that relative humidity averages and frequencies show only small variations over large areas.

Table 4 is a listing of the percent of time that the relative humidity from noon to 2:00 p.m. is below 35 percent.

PERCENT OF TIME RELATIVE HUMIDITY IS BELOW THE INDICATED VALUES

TABLE 2

*less than 1

	Less than 30%		Less than 50%		Less than 70%		Less than 80%		Less than 90%	
	All hours	Daytime	All hours	Daytime	All hours	Daytime	All hours	Daytime	All hours	Daytime
SPRING										
Augusta	4	8	25	43	49	69	62	79	77	89
Charleston	4	8	19	34	42	67	54	79	71	88
Charlotte	7	12	31	48	58	72	70	80	82	88
Columbia	8	14	30	49	53	72	65	81	80	88
Savannah	3	6	19	34	43	66	57	79	75	89
SUMMER										
Augusta	*	1	14	28	39	68	53	81	71	92
Charleston	*	1	4	7	27	50	41	72	60	88
Charlotte	1	2	17	32	45	70	60	82	78	92
Columbia	1	2	18	35	44	72	59	84	77	94
Savannah	*	*	7	14	33	61	49	78	72	91
FALL										
Augusta	2	3	16	29	35	59	48	71	64	83
Charleston	1	2	10	18	29	52	41	68	59	82
Charlotte	2	5	20	35	45	64	60	74	77	85
Columbia	3	6	19	34	40	63	52	73	70	83
Savannah	1	1	10	19	32	55	47	70	68	84
WINTER										
Augusta	2	5	19	33	44	60	57	71	74	82
Charleston	3	6	17	30	40	57	54	69	71	80
Charlotte	3	6	24	37	54	62	67	73	78	81
Columbia	4	7	22	37	46	62	58	71	74	82
Savannah	2	5	16	28	41	58	56	70	75	82
YEAR										
Augusta	2	4	18	33	41	64	54	76	70	87
Charleston	2	4	12	18	34	34	47	16	65	13
Charlotte	3	6	23	32	50	29	63	10	78	10
Columbia	4	7	22	31	45	28	58	10	75	10
Savannah	2	3	14	24	38	60	53	74	73	86

RELATIVE HUMIDITY

Percent of time the relative humidity is below the indicated value

TABLE 3a

Augusta, Georgia (1951-1960)

JANUARY

Hours of day	30%	50%	70%	80%	90%
01 EST	0	4	23	37	59
07 "	0	1	15	30	52
10 "	0	13	51	70	86
13 "	7	46	76	83	90
15 "	11	56	79	86	91
16 "	12	54	79	86	92
17 "	5	46	74	83	90
19 "	1	13	51	68	86

FEBRUARY

01 EST	0	5	25	43	65
07 "	0	2	14	26	47
10 "	0	22	59	72	83
13 "	7	52	79	84	91
15 "	16	59	82	87	91
16 "	14	59	80	86	91
17 "	11	56	78	85	90
19 "	2	21	62	75	83

MARCH

01 EST	0	4	30	45	67
07 "	0	3	19	34	56
10 "	1	31	61	74	85
13 "	11	53	75	83	90
15 "	21	63	78	84	90
16 "	23	63	78	84	89
17 "	20	60	77	84	89
19 "	0	30	68	77	86

APRIL

01 EST	0	2	18	31	59
07 "	0	1	11	26	56
10 "	1	32	74	85	91
13 "	12	58	84	91	95
15 "	19	67	86	91	96
16 "	20	69	85	91	95
17 "	17	67	84	90	95
19 "	2	28	69	82	92

Augusta, Georgia Cont.

JULY

/Hours of day	30%	50%	70%	80%	90%/
01 EST	0	0	2	12	40
07 "	0	0	4	15	52
10 "	0	10	62	89	98
13 "	1	40	89	96	98
15 "	1	43	84	92	97
16 "	2	41	80	90	96
17 "	2	34	75	88	95
19 "	0	9	54	75	90

OCTOBER

01 EST	0	1	6	16	33
07 "	0	0	3	11	29
10 "	1	19	59	77	92
13 "	7	48	81	88	93
15 "	13	57	83	88	93
16 "	11	56	82	87	92
17 "	4	37	76	84	89
19 "	0	4	24	54	84

NOVEMBER

01 EST	0	2	14	25	46
07 "	0	1	8	19	36
10 "	1	20	60	72	83
13 "	12	58	81	88	94
15 "	19	61	84	88	94
16 "	17	60	84	88	94
17 "	7	43	78	87	94
19 "	1	11	43	68	85

DECEMBER

01 EST	0	4	24	39	60
07 "	0	3	14	27	51
10 "	0	16	55	70	82
13 "	7	51	78	85	89
15 "	12	57	82	87	91
16 "	13	55	80	85	90
17 "	3	39	74	82	88
19 "	0	12	43	68	82

RELATIVE HUMIDITY

Percent of time the relative humidity is below the indicated value

TABLE 3b

Charlotte, N. C.

(1951-1960)

/Hours of day	30%	50%	70%	80%	90%/
		JANUARY			
01 EST	0	6	44	59	71
07 "	0	2	27	49	64
10 "	0	26	59	71	79
13 "	9	52	74	83	88
15 "	13	53	77	84	89
16 "	13	51	74	84	88
17 "	7	46	69	78	85
19 "	1	31	61	72	82
		FEBRUARY			
01 EST	0	9	46	61	74
07 "	0	2	27	44	64
10 "	1	32	61	71	79
13 "	10	59	76	81	86
15 "	20	65	77	82	87
16 "	19	63	77	82	87
17 "	13	60	76	81	87
19 "	2	36	69	76	81
		MARCH			
01 EST	0	11	49	63	76
07 "	0	4	31	50	67
10 "	3	44	66	75	82
13 "	21	60	76	81	87
15 "	28	63	80	84	90
16 "	29	63	81	84	90
17 "	26	60	77	84	89
19 "	4	49	72	80	87
		APRIL			
01 EST	0	9	44	61	75
07 "	0	2	26	49	70
10 "	4	41	75	82	91
13 "	22	70	84	89	95
15 "	31	73	84	89	94
16 "	28	72	83	88	93
17 "	27	68	82	86	92
19 "	4	49	74	79	89

Charlotte, North Carolina Cont'd.

JULY

/Hours of day	30%	50%	70%	80%	90%/
01 EST	0	0	10	30	56
07 "	0	0	8	24	59
10 "	0	14	69	88	96
13 "	0	2	47	90	96
15 "	3	55	89	94	98
16 "	2	49	85	94	97
17 "	2	40	78	87	94
19 "	0	16	60	75	90

OCTOBER

01 EST	0	2	16	35	67
07 "	0	0	7	18	50
10 "	0	23	68	78	88
13 "	9	57	83	88	92
15 "	14	62	83	87	92
16 "	10	60	83	87	92
17 "	4	48	80	85	92
19 "	0	11	54	75	86

NOVEMBER

01 EST	0	4	26	49	72
07 "	0	2	15	29	61
10 "	2	32	65	76	83
13 "	11	58	80	86	89
15 "	17	61	83	86	93
16 "	15	59	82	86	91
17 "	7	49	78	84	90
19 "	2	23	64	77	86

DECEMBER

01 EST	0	6	41	60	76
07 "	0	3	25	47	68
10 "	0	25	61	72	81
13 "	7	55	76	81	89
15 "	12	58	77	84	90
16 "	9	56	76	82	89
17 "	2	45	73	78	87
19 "	1	24	64	75	82

RELATIVE HUMIDITY

Percent of time the relative humidity is below the indicated value

TABLE 3c

Savannah, Georgia (1951-1960)

JANUARY

Hours of day	30%	50%	70%	80%	90%
01 EST	0	2	21	38	61
07 "	0	1	11	24	53
10 "	0	15	54	69	82
13 "	7	43	78	86	91
15 "	12	49	79	87	91
16 "	10	44	79	86	92
17 "	4	35	73	84	89
19 "	1	13	47	72	86

FEBRUARY

01 EST	0	4	22	37	66
07 "	0	1	10	20	46
10 "	0	18	54	72	85
13 "	8	45	78	86	91
15 "	13	50	78	85	92
16 "	12	51	75	85	91
17 "	8	42	72	84	90
19 "	1	14	53	69	84

MARCH

01 EST	0	5	24	35	63
07 "	0	1	15	30	54
10 "	1	32	63	77	87
13 "	15	54	79	88	92
15 "	18	56	80	87	91
16 "	18	55	80	86	92
17 "	14	49	76	84	92
19 "	3	26	56	74	87

APRIL

01 EST	0	2	16	25	55
07 "	0	1	11	21	53
10 "	2	26	72	86	95
13 "	11	49	85	92	96
15 "	11	47	82	90	95
16 "	10	45	81	91	95
17 "	8	38	75	87	97
19 "	2	20	48	74	91

Savannah, Georgia Cont'd.

JULY

/Hours of day	30%	50%	70%	80%	90%/
01 EST	0	0	1	7	43
07 "	0	0	1	11	57
10 "	0	5	67	87	96
13 "	0	21	81	93	98
15 "	0	24	71	85	92
16 "	0	17	72	86	92
17 "	0	12	62	82	89
19 "	0	2	29	66	85

OCTOBER

01 EST	0	1	4	14	47
07 "	0	0	4	12	38
10 "	0	11	57	76	89
13 "	1	36	78	87	92
15 "	3	39	78	87	92
16 "	3	35	75	85	92
17 "	1	22	67	81	92
19 "	0	2	23	58	84

NOVEMBER

01 EST	0	1	13	26	53
07 "	0	0	7	18	45
10 "	0	22	59	74	85
13 "	7	47	81	90	94
15 "	9	47	83	89	93
16 "	7	42	79	89	94
17 "	3	30	66	82	92
19 "	0	5	32	57	83

DECEMBER

01 EST	0	2	22	40	66
07 "	0	1	11	28	57
10 "	0	14	53	70	83
13 "	9	47	75	83	89
15 "	13	48	77	86	90
16 "	11	43	73	85	90
17 "	5	33	65	80	90
19 "	0	10	45	63	81

RELATIVE HUMIDITY

Percent of time the relative humidity is below the indicated value

TABLE 3d

Columbia, S. C. (1951 - 1960)

JANUARY

/Hours of day	30%	50%	70%	80%	90%/
01 EST	0	3	24	40	63
07 "	0	1	16	28	53
10 "	0	19	56	72	83
13 "	11	52	77	85	90
15 "	17	59	79	85	90
16 "	13	56	79	85	90
17 "	8	48	73	82	89
19 "	1	16	53	69	84

FEBRUARY

01 EST	0	4	29	43	64
07 "	0	2	17	27	50
10 "	1	28	62	74	81
13 "	14	59	79	84	90
15 "	19	64	82	86	92
16 "	21	65	81	85	91
17 "	17	59	77	83	88
19 "	1	30	66	74	84

MARCH

01 EST	0	6	35	50	68
07 "	0	3	18	33	60
10 "	3	41	68	77	87
13 "	25	60	80	85	92
15 "	30	66	79	86	92
16 "	32	65	80	87	92
17 "	31	64	79	85	90
19 "	5	41	69	78	85

APRIL

01 EST	0	6	25	45	71
07 "	0	4	16	36	63
10 "	6	40	75	83	91
13 "	22	49	65	70	74
15 "	31	73	86	92	94
16 "	31	71	87	92	96
17 "	27	70	83	90	93
19 "	6	51	75	84	90

Columbia, South Carolina Cont'd.

JULY

/Hours of day	30%	50%	70%	80%	90%/
01 EST	0	0	6	22	62
07 "	0	0	5	20	63
10 "	0	18	77	93	97
13 "	2	48	90	94	98
15 "	5	58	86	93	97
16 "	4	53	83	93	98
17 "	4	45	80	89	95
19 "	0	16	63	78	92

OCTOBER

01 EST	0	2	9	21	46
07 "	0	0	5	12	33
10 "	1	24	64	79	90
13 "	10	58	84	90	94
15 "	13	60	85	88	92
16 "	11	60	84	88	92
17 "	4	47	81	86	92
19 "	0	5	41	72	85

NOVEMBER

01 EST	0	3	16	29	52
07 "	0	1	9	21	43
10 "	1	27	65	79	84
13 "	18	61	83	89	93
15 "	25	68	85	88	94
16 "	21	62	82	85	91
17 "	10	48	76	84	89
19 "	1	12	49	70	84

DECEMBER

01 EST	0	5	23	37	62
07 "	0	3	17	29	51
10 "	0	24	62	73	85
13 "	12	57	80	86	91
15 "	17	60	80	85	90
16 "	16	56	79	84	89
17 "	6	41	72	79	86
19 "	1	14	48	67	82

RELATIVE HUMIDITY

Percent of time the relative humidity is below the indicated value

TABLE 3e

Charleston, S. C. (1951-1960)

JANUARY

/Hours of day	30%	50%	70%	80%	90%/
01 EST	0	3	20	31	55
07 "	0	2	16	28	52
10 "	1	19	56	73	86
13 "	11	48	78	85	91
15 "	11	52	78	87	93
16 "	8	44	76	85	91
17 "	2	32	63	78	88
19 "	1	10	40	63	83

FEBRUARY

01 EST	0	5	21	34	55
07 "	0	2	13	27	50
10 "	2	26	60	73	81
13 "	12	51	75	40	91
15 "	15	52	77	86	91
16 "	14	47	76	84	92
17 "	11	38	67	79	90
19 "	1	13	43	62	81

MARCH

01 EST	0	7	20	29	55
07 "	0	4	17	31	49
10 "	6	38	71	78	87
13 "	21	57	79	87	92
15 "	20	57	80	87	92
16 "	19	51	79	86	91
17 "	15	46	75	85	90
19 "	1	23	52	69	84

APRIL

01 EST	0	4	13	22	44
07 "	0	2	15	27	52
10 "	4	35	78	89	95
13 "	14	49	83	89	93
15 "	13	49	82	90	94
16 "	12	44	80	89	96
17 "	8	38	73	86	94
19 "	1	15	45	67	87

Charleston, South Carolina Cont'd.

JULY

/Hours of day	30%	50%	70%	80%	90%/
01 EST	0	0	0	3	17
07 "	0	0	1	8	47
10 "	0	2	48	81	95
13 "	0	10	72	87	94
15 "	0	7	62	81	91
16 "	0	5	56	74	86
17 "	0	3	46	72	87
19 "	0	0	12	45	80
		OCTOBER			
01 EST	0	1	4	12	32
07 "	0	0	5	12	30
10 "	0	14	54	75	89
13 "	2	34	77	89	94
15 "	3	32	76	86	93
16 "	2	26	70	85	91
17 "	0	13	58	79	89
19 "	0	1	9	32	73
		NOVEMBER			
01 EST	0	2	11	21	42
07 "	0	1	7	18	38
10 "	2	26	61	74	86
13 "	9	52	79	86	93
15 "	12	54	77	89	93
16 "	7	44	73	85	92
17 "	1	23	58	76	88
19 "	1	4	24	41	72
		DECEMBER			
01 EST	0	2	20	36	57
07 "	0	3	17	32	51
10 "	0	19	59	71	85
13 "	11	46	77	84	91
15 "	13	49	77	86	91
16 "	9	43	73	82	90
17 "	2	26	61	77	87
19 "	0	5	33	52	75

TABLE 4

PERCENT OF TIME THAT THE 1:00 p. m.
and 2:00 p.m. INCLUSIVE RELATIVE HUMIDITY
IS BELOW 35%

MO/STN	J	F	M	A	M	J	J	A	S	O	N	D
Augusta, Ga.	17	18	21	22	17	10	6	8	10	19	23	18
Asheville, N. C.	8	14	19	24	18	8	1	5	8	17	19	12
Charleston, S. C.	17	21	24	21	12	4	1	2	2	8	20	16
Charlotte, N. C.	19	21	25	28	18	16	12	10	14	21	23	19
Fort Bragg, N. C.	12	18	22	26	18	12	8	5	8	14	18	14
Greenville, S. C.	17	18	22	24	18	11	7	8	11	21	25	18
Myrtle Beach, S. C.	8	12	12	9	4	1	1	1	1	5	13	11
Savannah, Ga.	15	16	22	20	13	3	2	3	2	8	8	17
Sumter, S. C.	14	21	22	24	20	13	7	5	8	16	19	16
Wilmington, N. C.	15	16	20	20	10	5	1	2	2	10	14	18